

**A SUMMARY OF THE DEPARTMENT OF THE NAVY'S ENVIRONMENTAL
STEWARDSHIP AND ECONOMIC DEVELOPMENT EFFORTS
ON THE ISLAND OF VIEQUES, PUERTO RICO**

Introduction

On April 19, 1999, an unfortunate accident at the Atlantic Fleet Weapons Training Facility (AFWTF) on the island of Vieques, Puerto Rico, resulted in the death of a civilian security guard. The incident has catalyzed dispute about the Navy's activities on Vieques. This paper seeks to clarify the Navy's position with respect to environmental and economic issues associated with its operations on the island of Vieques.

The island of Vieques lies about seven miles southeast of the eastern end of Puerto Rico and is about 20 miles long and four miles wide at its widest point. The Navy owns about 22,000 of the 33,000 acres comprising the Island. It purchased this land at fair market value between 1941 and 1950 for approximately \$1.5 million. The property is used to train Navy and Marine Corps forces in the art of sea, air and land combat. The Live Impact Area (LIA) covers approximately 899 acres on the eastern end of the island and is used for Naval surface gunnery practice, air-to-surface ordnance delivery, and artillery and tank firing practice. The LIA is approximately ten miles from the nearest island residents.

Environmental Stewardship

The Navy and Marine Corps training on the range at Vieques, does not pose a risk to human health or the environment nor do these operations destroy the natural environment of the island. Although the Navy can and will improve efforts to protect the environment of Vieques, the Navy's overall environmental record on Vieques is an excellent one. The Navy is fully committed to complete compliance with all applicable environmental laws.

The Navy and Marine Corps activities on Vieques simulate combat, which is a violent endeavor. The live impact area is marked by bomb and shell craters and contains debris from the ordnance, the targets, and some unexploded ordnance. The Navy periodically sweeps the range to remove unexploded ordnance. A small number of rounds, approximately 80 each year, fall into the sea immediately adjacent to the impact area. These activities, however, do not threaten our neighbors on Vieques. The live impact area is buffered with additional land for safety reasons. It is located in a remote area on the tip of Vieques, approximately ten miles from the civilian portion of Vieques, and the topography and geology of Vieques interpose physical barriers between the impact area and the civilian area. The live impact area constitutes less than three percent of Vieques.

The Navy is dedicated to protecting the health and safety of all members of the Vieques community. The information available to the Navy before the current controversy did not reveal any significant off-range risks resulting from on-range activities. In keeping with its commitment to Vieques, however, the Navy undertook several new studies to evaluate whether Navy activities on Vieques are causing health risks to the people of Vieques. Any issues about health should be resolved on the basis of the best science available. It is not appropriate either to

ignore them or to act on unsupported allegations. The preliminary results of these studies show that there is no evidence that Navy activities pose a risk to human health.

The first study initiated by Navy, a human health risk assessment, is based upon techniques frequently used to determine risk to human health from environmental contamination. This human health risk assessment relies upon laboratory analysis of soil and water samples and geological, hydrological, and similar site-specific information. The human health risk assessment also determines the likelihood of people being exposed to the materials from the range activities, and if so, how this could occur. Although not all tests and analysis are complete, the preliminary results indicate that Navy activities do not pose a health risk in the area where people live on Vieques. This is because there are limited or no means for explosives-related residue from the impact area to migrate to the civilian community of Vieques. This conclusion is based on three primary reasons:

- First, sampling to date shows no unique contamination from explosives-related substances above background levels near civilian areas. To examine allegations that explosives-related substances from the impact area have contaminated the soil and ground water of Isabel Segunda and Esperanza, an environmental consultant sampled groundwater and surface soil along the western border of the Eastern Maneuver Area (i.e., the portion closest to the civilian population). Laboratory analysis of the samples showed that they did not contain compounds that would be present if explosives-related substances from the live impact area or open burning/open detonation areas had migrated to the populated portion of the island. Some materials used in the manufacture of explosives were detected, but only at naturally occurring background levels previously established by the United States Geological Survey. The levels of these same materials that were detected in the groundwater samples are significantly less than the amounts permitted in residential drinking water by EPA standards. The sample results show that wind or water from the impact range to the populated center of Vieques is not transporting explosives-related materials and thus does not pose a risk to the general public in Vieques.
- Second, studies show that groundwater flows away from the civilian community. The Navy studied the groundwater movement of the island after some of our neighbors on Vieques expressed concern that contaminants from the impact area could be transported by groundwater to Isabel Segunda and Esperanza. Tests of the groundwater hydrology along the western border of the Eastern Maneuver Area show that the groundwater in that part of Vieques flows predominately north and south to the ocean. This means that if any materials found in the Navy soil were to enter the groundwater, they would be transported away from the civilian community on Vieques, which lies to the west. The geology and topography of the Eastern Maneuver Area, which interposes a layer of highly impermeable rock between the impact area and Isabel Segunda and Esperanza, is such that any groundwater or runoff from rain on the impact area flows away from the civilian part of Vieques as well.
- Third, ambient air modeling shows that contaminants are not being transported to the civilian water supply in the air by smoke or dust. Some of our neighbors have expressed concern that
-

- contaminants could be spread by the wind from the impact area to Isabel Segunda and Esperanza and could contaminate drinking water. A consultant analyzed this risk using sophisticated air modeling techniques to determine if the public water tank that stores water that is pumped to Vieques from the main island could potentially contain materials from Navy activities, at levels of concern. The model used very conservative, worst case assumptions, such as assuming that the roof on the tank simply does not exist. Modeling results indicate that none of the chemicals of concern are deposited at levels that could cause the water in the tank to exceed, or even approach, EPA standards for drinking water.

These three separate approaches- sampling, modeling and simulation- all confirm that explosives related compounds do not pose a risk to the general public in Vieques. In addition, the Department of the Navy is continuing to study these issues to refine these preliminary results. We are committed to ensuring the continued protection of health and safety of all members of the community.

The Navy has also reviewed a limited epidemiological study that was performed by Dr. Zavala, the Director of Central Registry of Cancer for Puerto Rico. Dr. Zavala's study examined the relative prevalence of cancer in Vieques and Puerto Rico and represents a helpful first look at the issue. Dr. Zavala himself has recognized the limitations of this preliminary study and the need for further studies. Unfortunately, the Zavala study has been misused by some in the media to claim that the Navy's activities have significantly increased the risk of cancer on Vieques. To understand the claims being made by others about Dr. Zavala's study, the Navy had the Zavala study analyzed by an expert epidemiologist. The results of that analysis contradict many of the claims attributed by others to the Zavala study. Those claims are taken out of context and ignore many of Dr. Zavala's own professional findings.

Dr. Zavala's study does not show that residents of Vieques have had an increased risk of cancer between 1960 and 1992, as some have claimed. The study does not show that Navy or any other particular activities have increased the risk of cancer on Vieques. The Zavala study is a screening level study that is designed only to evaluate whether there is a statistically significant increased incidence of cancer among the general population of Vieques, as compared to the population of Puerto Rico. It does not identify any cause/effect relationships and thus does not identify the Navy or any other entity as a contributor to any incidence of cancer.

Dr. Zavala broke the period between 1960 and 1989 into five-year periods and compared the number of cancer cases diagnosed on Vieques for each period with an "expected" number of cancer cases based on reports from Puerto Rico as a whole. The differences between Vieques and Puerto Rico as a whole were statistically significant in only three of the six five-year periods from 1960 to 1989. During two of those periods, the data showed lower levels of cancer in Vieques than would be expected based on Puerto Rico's experience. During one period, from 1985 to 1989, Vieques experienced a statistically significant higher level. What has not been widely publicized, however, is that Dr. Zavala's examination of the most recent data studied, that for the period from 1989 to 1992, found that the level of cancer in Vieques for that abbreviated period was lower than what would be expected in Puerto Rico. This difference was

not statistically significant, however, and the data for 1993 to 1994 must also be examined to draw comparisons with the other five-year periods. Most important, Dr. Zavala acknowledged that the study design has a number of limitations and can only suggest the need for further investigation. The study does not adjust for confounding factors like smoking or diet, nor does it distinguish among the data by gender or tumor type as would be necessary to refine its conclusions. In fact, the totals for Puerto Rico include cancers from Vieques rather than being limited to "unexposed" areas.

The Agency for Toxic Substances and Disease Registry (ATSDR) has begun a study of health patterns at Vieques using a variety of sources for data, including information derived from Navy's environmental testing. Additional testing may also be required. The presence of trespassers in the impact area has complicated or prevented some efforts at data collection that would assist in the health study. The Navy is cooperating with and supporting the ATSDR efforts. In addition, the Department of the Navy is continuing its own studies of these issues so we can ensure the continued protection of health and safety of all members of the community. The evidence to date, however, does not support the claim that Navy activities on Vieques pose a substantial health risk to our neighbors.

Although protecting human health is paramount, the Department of the Navy is also dedicated to protecting and improving the environment of Vieques. The Navy has spent more than \$100 million on environmental compliance, restoration, and protection of cultural and natural resources in Puerto Rico, \$16 million of it directly on Vieques. The Navy's environmental stewardship and conservation activities on Vieques have been recognized as exceptional for many years. In testimony before the House of Representatives Subcommittee on Insular and International Affairs on October 4, 1994, the Honorable Manuela Santiago-Collazo, Mayoress of Vieques, stated: "In relation to environmental matters, the Navy has done a magnificent job. Their constant preoccupation with protecting the turtles and brown pelicans, endangered species, has been meritorious and worthy of commendation." In Navy-wide competitions in 1995 and 1997, the Naval Station Roosevelt Roads (including Vieques) Natural Resources Management Program won the Chief of Naval Operations Natural Resources Conservation Award, outpacing some exceptional mainland programs at much larger installations. Media forums dedicated to travel and leisure have also praised the Navy's stewardship. The April 1999 "Travel and Leisure" magazine featured Vieques and its Navy beaches as a great vacation location. The July 1999 "Conde Nast Traveler" magazine, commends the Navy's stewardship: "Vieques has benefited from Uncle Sam's restraint: The U.S. Navy owns two-thirds of the island and has left its land basically untouched."

In large measure, Vieques is as unique and beautiful as it is today because of the environmental stewardship of the Navy. The Navy has put considerable effort into preserving the land, fauna, and animals that make Vieques special. A very small portion of the Navy's property is used for the live impact area. A much larger area is used for maneuver training, but that training is not unduly disruptive to the environment. Large portions of the Navy's land are used to preserve the environment. This is nowhere more evident than the seven conservation zones that the Navy has established to protect rare flora and fauna. These conservation zones

were established in 1984 after consultation with the U.S. Fish and Wildlife Service, the U.S. Forest Service, and the Puerto Rico Department of Natural and Environmental Resources (DNER). Most of these zones are available for recreational use by the general public. Although the U.S. Marine Corps, and occasionally allied forces, train for amphibious operations on Vieques, we have been able to ensure that both the training and the environment are preserved by tightly restricting or banning training in these zones. Amphibious operations occur on Yellow, Purple, Red, and Blue beaches. Once the forces have landed, they are required to move immediately and directly to the dirt roads in order to avoid impacting the conservation zones that surround the roads. The troops then transit to the Eastern Maneuver Area for additional training.

The Navy has preserved each conservation zone for a special reason and each has a unique value:

- The Punta Este Conservation Zone is located at the southeast end of the Live Impact Area. The vegetation here mainly consists of drought-resistant scrubs that can no longer be found anywhere else in Puerto Rico except on Navy property in Vieques. Punta Este also is home to an orchid that is classified as so rare in the Commonwealth of Puerto Rico that it is a candidate for listing under the Endangered Species Act.
- Cayo Conejo Conservation Zone consists of a small island that is located southwest of the Live Impact Area in Bahía Salina del Sur. It is important as a nesting habitat for the endangered brown pelican. The breeding colony that nests on the island is one of the largest in Puerto Rico and, according to reports, is healthy and expanding.
- The Ensenada Honda Conservation Zone lies between the Blue and Yellow Beaches on the southern coast of Vieques. This area includes extensive mangroves, as well as the best example of lowland forest on Vieques. The beauty of the forest is enhanced by stands of ucar, an urban shade tree, 30 to 60 feet tall, that is fairly resistant to hurricanes, salt spray, and drought. The ucar is intermixed with *Cobana negra*, a plant listed in 1990 as a threatened species under the Endangered Species Act. The Navy prohibits any off-road military maneuvers in this area to protect the forest.
- The South Coast Bays Conservation Zone is located in the middle of the island on the south side. This zone includes the coastal areas directly south of Camp Garcia on the western portions of the Eastern Maneuver Area (EMA). Two of the bays (Bahía Tapon and Puerto Mosquito) have bioluminescent qualities. The Navy prohibits any off-road military maneuvers to protect the unique qualities of the bays.
- The Playa Grande conservation zone is located on the south coast of the Naval Ammunition Support Depot on the southwestern side of the Island. The mangrove-lagoon area provides important fishery (*e.g.*, spawning and nursery areas) and wildlife habitat. Off-road military maneuvers are prohibited in this zone also.

- The Monte Pirata Conservation Zone is located just west of the Playa Grande. This area supports the most diverse upland forest, and some of the oldest, largest, rarest, and most unusual trees anywhere on Vieques. Several plants identified as “species of concern” by the Commonwealth of Puerto Rico are also located in this area. In addition, this conservation zone includes coastal areas that are important as brown pelican roosting sites and as sea turtle nesting and feeding habitat. To preserve these qualities, the Navy does not permit any off-road military activities above the 100 meter contour. The military may only use existing facilities and no more may be constructed.
- The Laguna Kiani Complex Conservation Zone, on the northwestern tip of Vieques, encompasses extensive mangrove forest areas. This area is also important for brown pelican roosting and sea turtle nesting habitat. Remnants of *Cobana negra* can also be found here. In 1998, the Navy, in cooperation with the DNER, completed construction of a boardwalk and wildlife observation area in this conservation zone. Visitors are able to observe brown pelicans, land crabs, and the mangrove/lagoon area in order to learn more about this ecosystem.

The preservation of these unique conservation areas, which were established and are maintained by the Navy, is important to the environmental health of Puerto Rico. The Navy integrated these zones into its Land Use Management Plans for Vieques. These plans have been developed and updated over the past several years – most recently in 1996. Comprehensive planning through these Management Plans is a powerful tool. The Navy employs this tool to protect sensitive habitats such as the mangroves, forest, evergreen scrub and lowland forests, threatened and endangered plants and wildlife, such as *Cobana negra*, sea turtles, brown pelicans, West Indian Manatees, and the bioluminescent bay that is so important to the Viequense tourist economy.

The Navy has also had great success in its efforts to protect and enhance sea turtles, which are considered endangered under the Endangered Species Act. The Navy has been assisted in these efforts by the DNER. The Navy prefers to use Red and Blue Beaches for amphibious operations because sightings of turtles and their nests there are infrequent. Prior to any amphibious operations taking place, the Navy surveys the beach areas for signs of turtles. If nests are found, they are marked off limits to prevent any disturbance of the nest during the exercise. In the alternative, the turtle eggs are moved to the Navy-funded turtle hatchery.

If operations are planned for Yellow, Purple or Green Beaches, the Navy repeatedly surveys the beaches, starting 60 days before the planned operations to ensure protection of turtle nests. Sixty days is the incubation period for the turtles. If nests are found, they are marked "off limits" or the eggs are carefully transported to the hatchery. In recent exercises, turtle nests were prominently marked as “mine fields” in order to protect the nests during military training. If we find a nest near either end of the beach, the exercises are restricted to the center of the beach area. This eliminates any traffic in the preferred turtle nesting areas.

Unfortunately, poaching of turtle eggs by civilians is a significant problem. To reduce this problem, the Navy has erected signs prohibiting vehicular traffic on all beaches. We hold security personnel responsible for protection of sea turtles and their nesting areas and have established procedures to prevent poaching. These measures have been assisted by a field biologist and a biological aide, which the Navy has funded for the DNER. The Navy has also funded the operation of a turtle hatchery since 1991. Through a cooperative agreement between the Navy and DNER, DNER manages the hatchery to help increase the survival of these turtles. Relocating the eggs to the hatchery helps protect the eggs from predation, destruction, and poaching. Between 1991 and 1999, 30,000 hawksbill and leatherback turtle eggs were relocated to the hatchery. Nearly 21,000 of those eggs hatched and the turtles were released back into the wild -- a success rate of 70 percent, which is higher than the natural survival rate. The sea turtle conservation project -- funded by the Navy -- also annually conducts turtle education programs for schools and civic groups.

The Navy has also taken steps to protect marine mammals, especially the endangered West Indies manatee. A study by the U.S. Fish and Wildlife Service and current Navy-funded studies show that manatees generally reside off the northwest coast of Vieques. In 1995, the Navy, in coordination with the National Biological Service, created maps of all the sea grass at Vieques because sea grass is a key forage for the manatees. The only extensive sea grass beds are located on the northwest end of Vieques, which is not an area used for naval operations. Just in case, operators of Navy vessels are briefed to avoid sea mammals when they are detected in areas used by the Navy. The Navy also maintains a log at the Inner Range Observation Post to record manatee and whale sightings. Delivery of live ordnance is halted if a marine mammal is sighted within 1000 yards of the targets. A manatee expert with the U.S. Geologic Service familiar with Vieques recently observed that he knows of no mortalities to manatees caused by the Navy and that the Navy-controlled areas are the safest for manatees in that part of the Caribbean. This success is largely due to the creation and maintenance of the conservation zones, where manatees are protected from the poaching and boat strikes that they experience in other parts of Puerto Rico.

The brown pelican is another endangered species that is under the Navy's stewardship. Although the pelicans nest in only one site on Vieques, at Cayo Conejo, they roost in several locations throughout the Island. Under a cooperative agreement with the U.S. Fish and Wildlife Service, the Puerto Rico Conservation Foundation commenced a project in 1997 to track the pelican population. All nests that are observed are tagged and regular follow-up visits are conducted. Each nest is observed until the chicks become juveniles and leave the nest and whenever possible, the juvenile is tagged with a leg band and a band on the right wing for easy identification from a distance. During 1997, project personnel visited Cayo Conejo on seven occasions. During these visits, they observed a total of 89 nests, 54 eggs, and 74 chicks. In 1998, project personnel observed 95 nests, 137 eggs and 52 chicks during seven visits.

The Navy has put Cayo Conejo strictly off limits to visitors to provide the best protection for the pelicans. Large signs in English and Spanish, legible from 600 feet away, are posted on the Island to indicate to boaters and fishermen that Cayo Conejo is off-limits. The Navy has also

established strict flight path limitations to separate its operations from pelicans: fixed wing aircraft can not fly lower than 1000 feet over the island and helicopters can not fly lower than 1500 feet within a 1000 foot horizontal buffer zone of the island.

The Navy has also been careful to preserve the historic and cultural heritage of Vieques. Archaeological surveys have shown significant cultural resources on the Island of Vieques. Navy surveys have located more than 300 sites with the potential to contain significant cultural resources. A total of 17 archaeological sites and districts are currently listed on the National Register of Historic Places. Personnel from the Puerto Rico State Historic Preservation Office visited most of the historic sites last June and confirmed that none of the sites have been affected by construction, land clearing, or any other form of human activity.

The Puerto Ferro Lighthouse has been listed as a historic site since 1977. Naval Station Roosevelt Roads initiated a project in August 1998 to determine the protection needs of the Puerto Ferro Lighthouse. During Fiscal Year 2000, the Navy will be conducting a comprehensive condition assessment and preparing a conservation plan for the Puerto Ferro Lighthouse. These studies will be developed by Puerto Rican historical architects, architectural historians, architectural conservators and engineers. The effort will be coordinated with the Puerto Rico State Historic Preservation Office.

In addition to protecting cultural resources from destruction by natural forces, they must also be protected from human disturbance. The Navy is currently conducting a \$1 million survey effort to update the 1986 Cultural Resources Management Plan, which is designed to prevent illegal collection of artifacts and to protect historic and cultural resources. This \$1 million effort was started in 1997 and will continue through 2002.

The Navy undertakes many of its stewardship activities under the framework of a Memorandum Of Understanding (MOU) entered into with the Commonwealth of Puerto Rico in 1983. We have worked closely with representatives of Puerto Rico Government agencies on many projects. Other agencies have cooperated as well. The 1983 MOU established a Management Advisory Committee (MAC), consisting of two representatives from the Navy, one representative from the U.S. Fish and Wildlife Service, one representative from the U.S. Forest Service and two representatives from DNER.

The development of the Natural Resources Conservation Program at Vieques is guided and monitored by the MAC, which serves as the focal point for land use and environmental concerns. Unfortunately, DNER has declined to attend meetings of the MAC since April. As a result, it is not participating in the Navy's latest initiative, re-opening the lagoon at Blue Beach. This lagoon was a victim of Hurricane George, which shifted sand and other sediment so as to close the lagoon. To help restore the lagoon and its mangroves, the Navy has applied for a permit from the Corps of Engineers to remove the sand from the entrance to this area. Governor Rossello had identified this lagoon as an area of particular concern. The MAC will also be used to coordinate the Navy's revised Integrated Natural Resources Management Plan, which is being developed to comply with the new Sikes Act.

Although the Navy is proud of its overall environmental record in Vieques, we know that there are areas where we must improve our environmental performance. One primary area for improvement is compliance with our National Pollution Discharge Elimination System (NPDES) permit. Navy received a NPDES permit in 1984, after the courts concluded that bombs and shells that struck the water adjacent to the live impact area constituted the discharge of a pollutant under the Clean Water Act. The Navy's Vieques NPDES permit is unique and presents some severe technical challenges. NPDES permits typically regulate end of pipe discharges from outfalls like those at wastewater treatment plants or similar industrial or commercial facilities. Under most NPDES permits, effluent discharges are subject to limitations on specific chemical components to certain technological standards for eliminating pollution and to enable the receiving water to meet water quality standards. Ordnance, however, is not like a traditional effluent, and its chemical constituents cannot be reduced through pretreatment or process changes. The emphasis in Navy's permit at Vieques is on determining whether the discharged ordnance (approximately 80 rounds per year) is degrading the water quality in an extraordinarily small way. The permit requires Navy to sample at the point of impact, up to twice per month, if ordnance misses the land targets and strikes the water. The Navy has submitted the results of the sampling to EPA every quarter for over 15 years. The samples are assessed with respect to Puerto Rico's water quality standards or natural background concentrations, whichever are higher. Navy's monitoring, as reported to EPA, shows exceedances of permit limits over the 15 years that sampling has been conducted. Last month, EPA issued Navy a Notice of Violation for the exceedances.

It does not follow from this that the small amount of Navy munitions cause the exceedances. The Navy, on three occasions, has commissioned technical studies to determine if there is correlation between the monitoring results and the amount of ordnance that strikes the water. All the studies failed to find any correlation with the exception of one finding that the amount of hexavalent chrome is mildly correlated with the total weight of rounds that strike the water. The amount of hexavalent chrome, however, meets permit requirements. Correlation studies were provided to EPA in 1989 when Navy applied to renew its NPDES permit and in 1991, after EPA asked for additional data.

The questionable relationship between ordnance discharges and water quality is no reason, however, not to aggressively try to determine why the exceedances were occurring. Since this spring, we have engaged in such a review. Without getting into a full technical discussion, reliably testing sea water for the chemicals of concern at the very low limits set by the NPDES permit is difficult and sometimes impossible. The natural constituents of sea water often interfere with the tests, and the slightest contamination of the sample when it is collected, transported, or tested will skew the results. Based upon the review we began this spring, which uses state-of-the-art techniques, it appears that the exceedances may stem from out-dated sampling and analytical techniques that were prescribed in 1984 when the permit was issued. The sampling and analytical techniques prescribed in 1984 do not account for salinity interference and other contaminants. The sampling techniques and permit limits are also mismatched. The permit limits are based upon the risk of chronic exposure (assuming that the contamination is present in uniform quantities over a long period of time) for which very low

limits may be appropriate, yet the sampling techniques prescribed in the permit are designed to measure acute (short term) effects. In June 1999, the Navy conducted additional water sampling using different laboratories and analytical techniques. The range was not operating at the time the samples were collected. The lab using the older techniques showed exceedances of the permit limits, while the lab using more up-to-date techniques did not show any exceedances. Navy is conducting additional sampling and testing to further determine whether the exceedances that were reported in the past reflect problems with sampling and analysis rather than actual changes in water quality. In the meantime, we have begun discussions with EPA Region II to modify the existing permit application to develop a permit based upon the best available scientific information and techniques that will protect the environment and allow the Navy to conduct training. Because the technical studies necessary to do this may take some time, a Federal Facility Compliance Agreement under E.O. 12088 may be an appropriate way to protect the environment in the interim. We will also consult with the Commonwealth of Puerto Rico on any modified permit, and the Commonwealth will have to issue a Water Quality Certificate before EPA issues any modified permit.

In summary, we have been good stewards of the land and water entrusted to our care at Vieques. We have protected and nurtured the wildlife, forests, plants, and resources as we have gone about our mission. Our use of a small portion of the island for a live impact area has not harmed the health of our neighbors on Vieques nor the environment in which they live. We are working hard to comply with our existing NPDES permit and, working with EPA, to ensure that a renewed permit reflects the best science available. Through careful management, we have helped maintain this pristine Island. The Navy will continue to work in partnership with representatives of Puerto Rico and Vieques to preserve this unique paradise.

Economic Development of Vieques

Under the provisions of the 1983 MOU, the Navy agreed to work with Commonwealth agencies and groups to seek grants, start up funds and financial assistance from other Federal agencies to encourage economic development on Vieques and to make every meaningful effort within its power to obtain full employment on the island. The Navy has diligently sought to fulfill these undertakings and achieve the goals of the MOU.

Vieques has an official labor force of about 2,700, out of a total population of approximately 9,300. In April 1999, Puerto Rico's Department of Labor reported that the Vieques unemployment rate was 9.2%, one of the lowest unemployment rates for any municipality of similar size in all of Puerto Rico and lower than Puerto Rico's overall unemployment rate of 10.9% for the same month¹.

¹ Puerto Rico Department of Labor Statistics, April 1999.

The Vieques economy remains relatively isolated from that of the main island of Puerto Rico. Communications are limited, and a substantial toll is placed on telephone calls from Vieques to any location on the main island.² Transportation is barely adequate and very inconvenient. Viequensans have the choice of either flying to the main island on an 8-passenger, propeller-driven aircraft at about \$40 for a roundtrip flight to Fajardo, the main island city closest to Vieques, or traveling on the Puerto Rico Port Authority's passenger ferry to Fajardo at about \$10 per roundtrip and 90 minutes each way. The passenger ferries are frequently inoperable and being repaired and, when operating, passengers are subject to harsh salt sprays on the sun deck or diesel fumes below in the enclosed passenger cabin. For these reasons, contact between main island residents and Viequensans remains limited. Less than 5% of main island Puerto Ricans have ever been to Vieques.

Power and water resources on Vieques are also dependent upon the main island. An underwater transmission line with an approximately 20-megawatt capacity supplies the island with power, and an underwater fresh water pipeline carries about 200,000 gallons per day of potable water to Vieques from the main island town of Naguabo. Some of these resources are then diverted to the more distant offshore Puerto Rican island of Culebra.

Both Vieques and Culebra are subject to very high tolls imposed on the transportation of commercial goods to and from these islands. The commercial ferry toll charged by Puerto Rico's Department of Transportation for one 40-foot (standard size) container from the main island port of Fajardo to and from Vieques is about \$419. This toll is higher than all of the combined roadway tolls on the main island of Puerto Rico.

Vieques' isolation from the main island of Puerto Rico has important consequences for its economic development. As a result of the Puerto Rico Port Authority's ferry tolls, the price of goods transported to Vieques is quite high. This toll also causes any goods manufactured or produced on Vieques to sell on the main island for high prices. For these reasons, Viequensans seek to avoid the high price of goods on Vieques by traveling to and shopping in Fajardo, resulting in additional costs and substantial lost time. Companies that may find Vieques attractive for business lose interest when they factor the ferry tolls into their projected cash flow analysis.

Even before the 1983 MOU was executed, the Navy and several Defense and other Federal agencies were working toward the goal of creating jobs on Vieques. In 1983, the Federal Government's Small Business Administration assisted the Navy in awarding a \$14.6 million, three-year contract to a textile company for the production of military shirts on Vieques. The production facility was funded under the Small Business Administration's Section 8(a) small and disadvantaged business set aside program, and the company established its operation on Vieques

² Depending upon the location called on the main island, it is typically less expensive to call long distance to any of the 50 States than it is to place a call from Vieques to a main island location.

in just five months. The expeditious action by both Government and private enterprise to establish this plant generated early credibility for the Navy's economic development program and provided it with momentum and publicity. The textile company created 175 jobs with an annual payroll of \$1.25 million but its business did not last. The company was debarred from Department of Defense (DoD) contracts and closed in 1988, resulting in the loss of all 175 jobs.

Another job creation effort involved a small electronics firm that was established in 1982. During the early years of its operation, the firm worked closely with major DoD prime contractors and received purchase orders of \$271,000 in 1983, \$619,000 in 1984, and \$440,000 in 1985. After Vieques was devastated by a direct hit from Hurricane Hugo in 1989, however, the company moved its operations stateside in order to meet contract delivery deadlines. The company concluded that the destruction caused by Hurricane Hugo was so severe that it could not become operational in time to fulfill its contractual obligations. As a result, about 70 people who worked at this electronics company lost their jobs.

After the MOU was executed in 1983, the Department of the Navy and the Department of Defense initiated a broad range of economic development efforts to create jobs and improve the well-being of the residents of Vieques. These efforts included providing funding for a full time economic development staff; making government contracts available to attract manufacturers to the island; sponsoring business partnerships; conveying land to promote infrastructure development; executing "no cost" leases of Navy property for agricultural and cattle grazing activities; and providing funding for and facilitating several business startups. These initiatives achieved mixed results.

Shortly after the MOU was executed in 1983, DoD's Office of Economic Adjustment (OEA) launched a program called "The Top Ten". With sponsorship from then-Secretary of Defense Caspar Weinberger and then-Vice President George Bush, the top ten defense contractors were flown to Vieques by DoD for an orientation visit. As a result of this program, companies such as Grumman, General Dynamics, Newport News Shipbuilding, Sperry, and United Technologies invested in Vieques and created over 400 direct new jobs. However, most of the jobs they created were eventually lost as a result of the high cost of doing business on Vieques generated by burdensome transportation and communications charges; poor management practices; debarment from government contracts; labor disputes; and the devastation wrought by Hurricane Hugo in 1989.

The Defense Department's OEA also assisted in establishing the Vieques Economic Development Company (VEDCO), a private economic development entity managed by local Viequensans for the purpose of establishing new job-creating businesses on Vieques. In 1987, the Vieques Economic Adjustment Program (VEAP) replaced VEDCO and was supported by annual OEA grants of about \$200,000 to Puerto Rico's Economic Development Administration. The VEAP office employed a full-time economic developer and secretary, and operated a storefront office in Vieques. The Vieques developer received extensive formal training from the American Economic Development Council, the certifying private agency that trains the

professional economic development community. The OEA grants were terminated at the end of Fiscal Year 1992, when OEA concluded that the funds used for Vieques were intended by statute to be short-term and could not exceed a reasonable funding period. For the program to continue, it was necessary for the Department of the Navy to obligate funds, and the Navy determined that its San Juan representative, an active duty officer, would assume the economic development role.

One of DoD's top ten prime contractors helped a graphics firm develop a feasibility study and business plan, which concluded that a specialized printing operation producing binders, business cards and catalogs could be profitable on Vieques. The plan identified the potential for nearly \$500,000 of business over a five-year period with the Vieques graphics company using state of the art modem interchanges for printing setups. Unfortunately, the company established only a general printing operation and never fully developed the specialized printing capabilities. The company ceased operations shortly after its establishment.

A specialty spice growing operation on Vieques was one of the first agricultural projects sought by DoD's Office of Economic Adjustment and Puerto Rico's Economic Development Administration. Leasing a 23,000 square foot building from the Puerto Rico Industrial Development Corporation and 140 acres of adjacent land from the Puerto Rico Land Administration, the project planned to grow spices for drying and sale to one of the major American spice companies. The project encountered cash flow problems from its parent company, however, and closed shortly after it was established.

In the late 1980's, a major tomato growing business from the United States tried to establish a tomato operation on Vieques on property near the 140 acres that had been set aside for the spice company. In a few test plantings, the tomato company grew excellent tomatoes on Vieques. For unknown reasons, possibly the lack of sufficient water for irrigation, the project never materialized.

One of the most natural undertakings on Vieques was the harvesting and processing of mesquite wood into charcoal and wood chunks for cooking. Mesquite grows wild on Vieques, particularly within the Eastern Maneuver Area. Although the trunks and branches are not substantial, there is ample mesquite on Vieques to sustain a small operation almost indefinitely.

A business making mesquite charcoal on Vieques began operating in 1989 and employed 10-20 people. It had orders for mesquite from some of the major hotels in San Juan and contracted with the Vieques machine shop to build a kiln. At the height of its operation, the mesquite company was processing about 8,000 pounds of mesquite per day. The venture failed in 1990, after the passage of Hurricane Hugo in 1989.

The Navy also supported cattle production by leasing, at no cost, more than 6,000 acres of Navy property at Camp Garcia to the local Vieques cattlemen's cooperative. At one point in the late 1980s, nearly 8,000 head of cattle roamed Camp Garcia, mostly without limits or fencing. Although rain provided some palatable growth for the cattle, the grass was of poor

nutritional value and drinking water was scarce. Poor livestock management also resulted in proliferation of the scrub brush-like mesquite that now covers most of Camp Garcia and the Eastern Maneuver Area. Part of the Vieques herd was killed during Hurricane Hugo in 1989. Cattlemen began to remove their cattle from the Camp Garcia property through the early 1990s. In 1994, not a single cow was to be found on Camp Garcia, even though the cattlemen's coop lease was still in effect.

In late 1993, the Naval Facilities Engineering Command's Atlantic Division (LANTDIV) negotiated the return of 1,000 acres of leased Camp Garcia property from the cattlemen's cooperative in order to establish a new cattle and hay production business. Applying lessons learned from the first coop lease, this project provided opportunities for the creation of new jobs, including a 10-year, rent-free lease. Using funds received from other main island agricultural leases, LANTDIV established a stringent cattle management program with this new venture, Agro Vieques, and agreed to reimburse Agro Vieques for the exterior fences, cattle gates and crossings, concrete water troughs, and other herd management tools that it erected. The project's business plan was to begin by growing hay, then section off its interior grazing areas, establish a positive cash flow from the sale of hay on the main island, and finally introduce cattle into the fenced grazing fields. At each stage, more jobs would be added.

One of the cornerstones of the cattle project's business plan was an oral agreement with the Puerto Rico Ports Authority to lower the ferry toll on its 40-foot hay trailers from the normal \$419 per round trip. In return for the lowered toll, the hay project would guarantee payment for the ferry space regardless of whether it was used or not. Although the agreement seemed sound as the venture began, the Ports Authority failed to conclude the agreement, making the project's hay non-competitive on the main island and reducing the enterprise's projected cash flow in the short-term. This project did not begin to prosper until 1999. The Navy has funded capital improvements totaling more than \$36,000 for this ranch. The enterprise now has more than 100 head of cattle and is seeking to expand its business.

Following the devastation caused by Hurricane Hugo in 1989, Rear Admiral John Moriarty, Commander Fleet Air Caribbean (COMFAIRCARIB) at Roosevelt Roads from 1987 to 1990, established the Vieques Task Force whose initial mission was to restore the destroyed Vieques infrastructure. After the hurricane cleanup was completed, Rear Admiral Moriarty focused the Task Force's attention on coordinating and accelerating the actions of Puerto Rico government agencies that could support economic development on Vieques. The Puerto Rican principals on the Task Force were the Governor of Puerto Rico, his Administrator for Economic Development, other members of his Cabinet, and the Mayor of Vieques, who was then a member of the political party opposed to the Governor. Navy members of the Task Force were COMFAIRCARIB and the Under Secretary of the Navy. Differences in perspective among Puerto Rican participants limited the Task Force's effectiveness, and the Mayor of Vieques called for its disestablishment in August 1992.

In 1992, Navy's Space and Naval Warfare Systems Command (SPAWAR) and the Office of the Assistant Secretary of the Navy (Research and Development) established a program to promote job growth on Vieques through a Section 8(a) electronics contract. By creating a partnership between a Puerto Rican main island electronic circuit board manufacturer and a Vieques-based machine shop, SPAWAR planned to procure small circuit board orders from the main island firm and have them subcontract to the Vieques machine shop for all of the housing and case work required to encase the finished circuit boards. Nearly \$400,000 in Navy work flowed to the main island firm and about half of this work was subcontracted to the Vieques shop. This effort encountered contracting difficulties, however, and no further orders were placed under the contractual agreement.

The Department of the Navy also tried to generate a private sector business base on Vieques by referring prospective businesses to Puerto Rico's Economic Development Administration. The Navy's economic development coordinator facilitated many such contacts. Between 1993 and 1995, the Navy undertook more than 20 major promotions to support economic development on Vieques, and the potential existed to generate more than 200 jobs. As with all economic development efforts, however, the ultimate decision whether to establish factories, farms, or service operations on Vieques lay with private enterprise and not with the Navy. Most of these promotional efforts failed to generate any long-term economic activity, but some continue to bear fruit today.

In 1994, the Navy initiated another prospective farming relationship with a San Juan farmer interested in growing aloe vera on Navy property at the Naval Ammunition Storage Depot (NASD) on the western end of the island. This project, however, never produced a business plan or demonstrated financing potential. Thus, no progress was made in implementing this proposal.

Three aquaculture projects have been proposed since conclusion of the 1983 Vieques MOU, and all failed to materialize. The first was a crab production project proposed for Ensenada Honda, a crab-shaped bay on the southeastern side of Vieques near the live impact area. There are insufficient historical data to ascertain why the crab project failed to materialize. The second was a shrimp farm proposed for Puerto Ferro, the bay east of the bioluminescent bay. This project was strongly opposed by Puerto Rico's Department of Natural and Environmental Resources, because the shrimp food and excrement could damage the bay and the nearby bioluminescent bay. The third, a land-based project, had reasonable potential for financing and marketability but failed to generate any support.

A series of bee farms was one of the most novel and initially successful projects established on Vieques. The island was regarded as one of the premier sites for keeping honeybees because of its remote location. Vieques is too far from the main island for bees to migrate to the island naturally, making Vieques queen bees marketable to beekeepers throughout the United States because of their purity. In 1994, the largest of the island's bee farmers began

expanding its operation beyond the sale of queen bees to include the bottling and sale of organic honey. Although this group was unable to convince Puerto Rico's largest grocery chain to carry its product line, Vieques honey was sold at many boutiques and airport stores throughout the Caribbean.

Unfortunately, the Puerto Rico Department of Natural and Environmental Resources failed to enforce a bee quarantine for Vieques, and the Vieques bees were infected by a devastating strain of varroa mites in 1997. This blight killed nearly all of the Vieques bees and destroyed the marketability of the remaining hives and queens. Nearly all of the Vieques bee farms closed shortly after this infestation.

The Navy has also tried to support Vieques' fishing industry. Vieques has one of the most productive fishing banks in Puerto Rico, although it is somewhat over-fished. The most productive fishing grounds around Vieques are located along its northeastern and southeastern coastlines, close to and including the waters surrounding the live impact area. Occasional closure of these waters due to range activities has helped limit the kind of over-fishing that has depleted once abundant fishing grounds in some other locations in Puerto Rico. Most fishermen are made aware of Navy exercises from notices posted around Vieques by the Atlantic Fleet Weapons Training Facility and they venture into the restricted range waters to retrieve their catch before the exercises begin. Other fishermen enter the restricted waters during Navy exercises to check their traps; foul the range; and delay the exercises.

The Vieques fishermen have complained that Navy vessels engaged in amphibious and Naval gunfire exercises cut their trap lines. Nearly all Vieques fish and lobster traps are marked by one to three plastic bottles tied to the trap line and, if cut, the trap is lost. In 1994, the Commander Fleet Air Caribbean acquired 500 highly visible buoys for issue to Vieques fishermen free of charge. Each buoy was marked with a number to identify each fisherman. Additionally, COMFAIRCARIB's Judge Advocate General designed a streamlined reimbursement plan to compensate Vieques fishermen for their traps if any of their numbered traps were lost during an exercise. The objective of this program was to eliminate the fishermen's primary complaint. The Vieques fishermen, however, declined to participate in the program. Thus, not a single buoy was ever issued.

The Navy's relationship with the Vieques fishermen should be mutually supportive. While the Navy's restricted operational areas are closed to mariners, they are available Vieques fishermen and they provide some of the best fishing grounds in Puerto Rico. However, because these waters are unavailable during exercises, Vieques fishermen believe the Navy has restricted their economic potential.

From 1993 until early 1996, Vieques economic development activities were the direct responsibility of COMFAIRCARIB through its San Juan Detachment's Officer In Charge (OIC). The Navy promoted more than 20 business prospects to the Puerto Rico Economic Development Administration and other Puerto Rico Government agencies during that period. These projects

included a coffee roasting plant; a Navy-funded study for an environmentally friendly, tertiary sewage treatment plant; and two major hotels, one that will open in January 2000 and another that will break ground in late 1999. During this period, the Navy also supported the Vieques airport runway expansion project, the outlease of agricultural parcels on the Naval Ammunition Storage Depot (NASD), the cattle/hay project, and a very ambitious project for the long-term preservation of Vieques' unique bioluminescent bay. After the departure of the San Juan Detachment's OIC and the disestablishment of COMFAIRCARIB in 1995, Naval Station Roosevelt Roads named an interim economic developer for Vieques, but that assignment ended in late 1996.

Despite the recent absence of a full time economic developer, Navy continues to fund and promote projects to create jobs and assist business enterprises on Vieques. Several offices at Naval Station Roosevelt Roads now serve collectively to facilitate the economic development of Vieques.

The Environmental Division (ED) of Naval Station Roosevelt Roads has the largest direct impact on developing the economic potential of Vieques. The ED's 1996 Land Use Management Plan established several prospective economic development alternatives for Navy's NASD property. These include the identification of more than 1,000 acres for agricultural development; identification of the kinds of agricultural projects that could be sustained on the property in light of the rainfall and soil conditions; and a detailed ecotourism development plan for the NASD conservation zones. The ED has also commissioned an Environmental Assessment for part of the NASD agricultural property in preparation for another land-based shrimp farm project that has been proposed by residents of Vieques.

The Real Estate Section (RES) of the Naval Station's Public Works Office also plays an important role in continuing economic development activities on Vieques. The RES coordinated with the Federal Aviation Administration and the Puerto Rico Ports Authority to facilitate the conveyance of Navy property at NASD that was required to expand the Vieques Municipal Airport's runway. This expansion will permit the operation of larger commuter aircraft essential to the success of resort hotels planned for Vieques. The RES has also worked closely with the cattle/hay production operation and is now processing a "no cost" lease of Navy property at NASD to support a second cattle grazing operation.

The Naval Station Judge Advocate General's (JAG) office has also been instrumental in the Vieques economic development effort. The JAG office concluded an agreement with Windjammer Cruise Lines that allows passenger vessels to dock at the Navy's Mosquito Pier to support tourist excursions to Vieques. This office also concluded an agreement with Puerto del Rey Marina on the main island of Puerto Rico to allow sailing excursions to NASD's Green Beach. The JAG office is now discussing new proposals with several developers who want to engage in business activity on Vieques.

In summary, the Department of the Navy and the Federal Government have dedicated substantial resources to the economic development of Vieques. In the mid and late 1980's, the Secretary and Deputy Secretary of Defense, the Secretary and Under Secretary of the Navy, and even the Vice President of the United States personally committed their time and energy to these efforts. Since 1983, the local Navy Commanders have dedicated substantial personal attention and resources to Vieques and the creation of jobs, opportunities, and an improved quality of life for the island's residents.

The lesson of Navy's economic development initiatives is that Vieques is a challenging place to do business. The cost of transporting raw materials, finished goods and agricultural products to and from the island by way of the Ports Authority ferry system adds significant cost to products and, in most cases, prices finished goods out of the market. Agricultural land is available, including Navy property, but agriculture does not produce very many direct jobs, with the result that land availability alone is not the answer. Ecological tourism opportunities exist, but the fragility of the resources to be exploited and an inadequate supply of trained tour operators make this a slow growth industry. Some hoteliers who appreciate the natural beauty of the island with its pristine conservation lands and beaches have opened several new hospitality facilities. However, some business leaders and residents of Vieques are concerned by the possibility that the Navy could leave the island and trigger a land rush and instability that would diminish the island's unique attraction and destroy its pristine natural resources. Thus, they are reluctant to invest in new projects.

There are significant opportunities for development on Vieques, but any such efforts must be cooperative ventures among the Government of Puerto Rico, the Vieques Municipality, business investors, and the Navy. Although the Navy can, and should, assist in the future development of Vieques, the Government of Puerto Rico must ultimately decide whether it will place Vieques on a level playing field with the main island of Puerto Rico. The Government of Puerto Rico controls transportation, public infrastructure, education, health care and other resources that will largely shape the future quality of life on Vieques. This consideration is important, because some of the concerns expressed about the Navy's presence on Vieques focus only on its impact on economic development.

The Navy's and the Department of Defense's considerable efforts on behalf of the residents of Vieques should be recognized and credited, particularly in light of the substantial challenges of doing business on this unique island. The economy of Vieques is currently dependent upon off-island economic resources. Vieques has natural resources that make the island an attractive destination but it has not capitalized on these resources because of a lack of capital, lack of economic development expertise, and a desire by many residents of Vieques to forego development in favor of keeping their island relatively private.